

CLAIMS

1. Composition for use in a dishwashing machine, characterized by

- a basic composition (2, 3; 2') evolving its function essentially in the main cleaning cycle of the dishwashing machine and
- at least one particle (6; 6'; 6'') with
 - at least one core (8; 8'; 8'') incorporating at least one substance evolving its function essentially in the clear rinsing cycle of the dishwashing machine and
 - an envelope (9; 9'; 9'') substantially completely surrounding the core or cores and incorporating at least one compound, whose solubility increases with decreasing concentration of a specific compound in the surrounding medium,

in which agents are provided, so that at the start of the clear rinsing cycle a substantial dissolving of the envelope (9; 9', 9'') or an essential detachment of the envelope (9; 9'; 9'') from the core (8; 8') or the cores (8'') is prevented.

2. Composition according to claim 1, characterized in that the concentration of the specific compound in the local environment of the particle or particles (6; 6'; 6'') is sufficiently high up to the start of the clear rinsing cycle to ensure that up to this time a substantial dissolving of the envelope (9; 9'; 9'') or a substantial detachment of the envelope (9; 9'; 9'') from the core (8; 8') or cores (8'') is prevented.

3. Composition according to claim 2, characterized in that the particle or particles (6; 6'; 6'') are coated with a substance which, substantially independently of the concentration of the specific compound in the surrounding medium, dissolves or separates during the main washing cycle of the dishwashing machine.

4. Composition according to one of the claims 1 to 3, characterized in that the basic composition is in the form of a tablet (1; 1').

5. Composition according to claim 4, characterized in that the at least one particle (6; 6'; 6'') is so placed in or on the tablet (1; 1') that the concentration of the specific compound in the local environment of the particle or particles is sufficiently high up to the substantially complete

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dissolving of the tablet (1; 1') in order to prevent a substantial dissolving of the envelope or a substantial detachment of the envelope from the core or cores.

6. Composition according to claim 5, characterized in that the particle or particles (6) are received in at least one cavity (4, 5) of the tablet (1) completely surrounded by the basic composition (2, 3).

7. Composition according to claim 6, characterized in that the at least one cavity (4, 5) contains one or more particles (6), which alone or together substantially has the same volume as the cavity (4, 5).

8. Composition according to claim 6, characterized in that the at least one cavity has a larger volume than the or all the particles (6) received in the particular cavity (4, 5).

9. Composition according to claim 8, characterized in that the particle or particles (6) are loosely arranged in the interior of the cavity (4, 5).

10. Composition according to claim 8, characterized in that the particle or particles (6) are fixed in the interior of the cavity (4, 5).

11. Composition according to claim 10, characterized in that the particle or particles (6) are fixed by an adhesive in the interior of the cavity (4, 5).

12. Composition according to one of the claims 6 to 11, characterized in that the cavity (4, 5) is substantially centrally positioned in the interior of the tablet (1).

13. Composition according to one of the claims 6 to 12, characterized in that the tablet (1) has a single, substantially spherical cavity (4, 5).

14. Composition according to one of the claims 8 to 13, characterized in that a single, substantially spherical particle (6), whose external diameter is smaller than the internal diameter of the cavity (4, 5) is received in the latter.

15. Composition according to claim 5, characterized in that the or all the particles (6'; 6'') are received in at least one cavity (4') of the tablet (1'), which is only partly surrounded by the basic composition.

16. Composition according to claim 15, characterized in that the cavity is a depression (4') in one of the surfaces (11') of the tablet (1') in which the

particle or particles (6'; 6") are at least partly received.

17. Composition according to claim 15 or 16, characterized in that the particle or particles (6'; 6") are received in the cavity or depression (4') in such a way that they do not project over the surface or surfaces (11') of the tablet (1').

18. Composition according to one of the claims 15 to 17, characterized in that the cavity or depression (4') only contains a single particle (6'; 6"), whose volume and shape in the vicinity of the cavity or depression substantially coincides with the volume and shape of the cavity or depression (4') and substantially completely fills the same.

19. Composition according to one of the claims 15 to 18, characterized in that the cavity or depression (4') has a substantially circular cross-sectional surface parallel to one of the surfaces (11') to which it opens or in which it is placed.

20. Composition according to one of the claims 15 to 19, characterized in that the cavity or depression (4') only opens towards the surface or surfaces (11') to such an extent that the particle or particles (6; 6'; 6") received therein cannot pass through the opening or openings of the cavity or depression (4').

21. Composition according to claim 20, characterized in that the particle or particles (6'; 6") are loosely arranged in the cavity or depression (4').

22. Composition according to one of the claims 15 to 20, characterized in that the particle or particles (6'; 6") are fixed in the cavity or depression (4').

23. Composition according to claim 22, characterized in that the particle or particles (6'; 6") are fixed by an adhesive (10') in the cavity or depression (4').

24. Composition according to one of the preceding claims, characterized in that the basic composition (2, 3; 2') comprises at least one composition selected from the group consisting of a machine dishwashing agent composition, a water softener composition and a washing intensifier composition.

25. Composition according to one of the preceding claims, characterized in that the envelope (9; 9'; 9") incorporates at least one compound which, at

the concentration of the specific compound at the end of the main cleaning cycle of the dishwashing machine is not or is only slightly soluble and at the concentration of the specific compound in the clear rinsing cycle has such an adequate solubility that it is so significantly dissolved in the clear rinsing cycle or detached from the core or cores that an at least partial escape of the core material into the medium of the clear rinsing cycle is made possible.

26. Composition according to claim 25, characterized in that the solubility of the compound increases with decreasing OH⁻ ionic concentration and therefore decreasing pH-value in the surrounding medium.

27. Composition according to claim 26, characterized in that at a pH-value above 10 the compound has no or only a limited solubility and at a pH-value below 9 a solubility which is adequate to ensure that in the clear rinsing cycle it is so significantly dissolved or detached from the core or cores that an at least partial escape of the core material into the medium of the clear rinsing cycle is made possible.

28. Composition according to one of the claims 25 to 27, characterized in that the compound comprises a polymer.

29. Composition according to claim 28, characterized in that the compound comprises a pH-sensitive polymer, which incorporates at least one repeat unit, which has at least one basic function, which is not part of the polymer backbone chain.

30. Composition according to claim 29, characterized in that the polymer has at least one repeat unit, which is based on a compound selected from the group consisting of vinyl alcohol derivatives, acrylates or alkyl acrylates having said basic function.

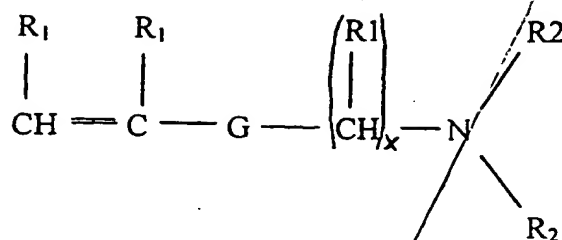
31. Composition according to claim 29, characterized in that the polymer is a carbohydrate functionalized with said basic function.

32. Composition according to one of the claims 29 to 31, characterized in that the basic function is an amine.

33. Composition according to claim 32, characterized in that the basic function is a secondary or tertiary amine.

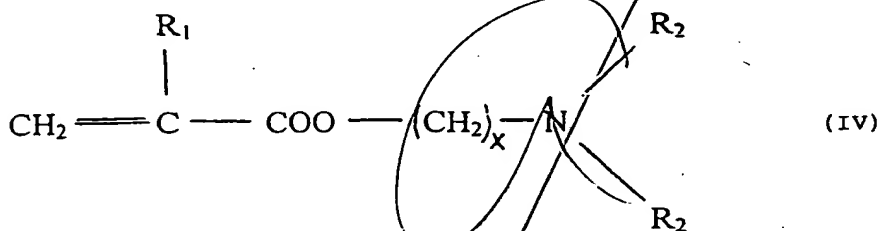
34. Composition according to claim 33, characterized in that the repeat unit is based on a compound with the following formula III:

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in which G is a linking group selected from -COO-, -OCO-, -CONH-, -NHCO-, -NHCONH-, -NHCOO-, -OCONH- or -OCOO-, R₁, independently of one another, is hydrogen or an alkyl group with 1 to 3 carbon atoms, R₂, independently of one another, is hydrogen or an alkyl group with 1 to 5 carbon atoms and x is an integer from 1 to 6.

35. Composition according to claim 34, characterized in that the repeat unit is based on a compound with the following formula IV:



in which R₁, independently of one another, is hydrogen or an alkyl group with 1 to 3 carbon atoms, R₂, independently of one another, hydrogen or an alkyl group with 1 to 5 carbon atoms and x is an integer from 1 to 6.

36. Composition according to one of the claims 29 to 31, characterized in that the basic function is an imine.

37. Composition according to one of the claims 29 to 31, characterized in that the basic function is a basic, aromatic N-containing group.

38. Composition according to claim 37, characterized in that the basic function is a pyridine group.

39. Composition according to claim 37, characterized in that the basic function is an imidazole group.

40. Composition according to claim 31, characterized in that the pH-sensitive polymer is a polymer derived from chitosan.

41. Composition according to claim 25, characterized in that the compound incorporates K-carrageenan.

42. Composition according to one of the preceding claims, characterized in that the core or cores incorporate at least one material selected from the group consisting of surfactants, antibacterial compositions, silver protection agents, fragrances, bleaches, disinfectants, odour masking agents, anti-coating agents and enzymes.

43. Composition according to claim 42, characterized in that the core (8; 8') or at least part of the cores (8'') is in the form of an encapsulated liquid.

44. Composition according to claim 43, characterized in that the core (8; 8') or at least a part of the cores (8'') is in the form of a liquid contained in a gelatin capsule.

45. Composition according to claim 42, characterized in that the core (8; 8') or at least a part of the cores (8'') is in solid form.

46. Composition according to claim 45, characterized in that the core (8; 8') or at least a part of the cores (8'') has a melting point of more than 35°C.

47. Composition according to claim 46, characterized in that the core (8; 8') or at least a part of the cores (8'') has a melting point between 55 and 70°C.

48. Process for performing a dishwashing cycle in a dishwashing machine, characterized in that a composition according to one of the claims 1 to 47 is added at an appropriate time during the prerinsing cycle or main cleaning cycle to the medium in the dishwashing machine.

49. Process according to claim 48, characterized in that for the case where the basic composition in the form of a tablet is unable following its dissolving in the medium and up to the end of the main cleaning cycle to make available in the medium a concentration of the specific compound which is sufficiently high in order to prevent a substantial dissolving of the envelope and a substantial detachment of the envelope from the core or cores, said adequate concentration of the specific compound is made available by the addition of a further composition, such as e.g. a machine dishwashing agent composition, to the medium of the main cleaning cycle at an appropriate time.

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